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EXAMINER	
MATIN, NURUL M	

ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/815,171	TINSLEY ET AL.	
	Examiner	Art Unit	
	Nurul M. Matin	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 November 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-22 and 24-29* is/are rejected.

7)☒ Claim(s) *8 and 23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/8/2005,10/18/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's arguments filed on November 5th, 2007 have been fully considered but they are not persuasive.

Response to Arguments

2. Applicant's arguments filed on 11/05/2007 have been fully considered but they are not persuasive. The Examiner has thoroughly reviewed Applicant's arguments but firmly believes that the cited reference reasonably and properly meet the claimed limitation as rejected. Applicant admitted that the Office Action stated Jean discloses generation of a carrier signal and Liu is cited to show use of a window function applied to a signal. He also said Liu does not therefore recite shaping a carrier signal with a window function. However, Liu does teach window functions in signal processing by Hanning, Hamming and Blackman can also be used as the shaping pulse and the combination of Jean and Liu would be obvious to one of ordinary skill in the art to minimize the distortion measured at the power amplifier output.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jean et al, US 2004/0239337 and in view of Liu, US 2005/0078767.

Re claim 1, Jean discloses a method of generating an ultrawideband radio frequency pulse (page 2, Para [0014], comprising: generating a carrier signal having a selected frequency (page 8, Para [0086], line 5-10, "A UWB pulse is modulated onto one or more carrier signals whose frequencies are selectable from a known set of frequencies. But Jean fails to disclose shaping the carrier signal with a window function to produce an ultrawideband pulse. However, Liu does (page 2, Para [0027], line 8-10, "Window functions in signal processing by Hanning, Hamming and Blackman can also be used as the shaping pulse. Let the pulse shaping function be p(t).

Therefore, taking the combined teaching of Jean and Liu as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the arrangement of the shaping the carrier signal with a window function to produce an ultrawideband pulse as thought in Liu into Jean so that the distortion measured at the power amplifier output is minimized.

Re claim 2, Jean and Liu references teach the method of claim 1, and Jean references also teaches the window function comprises a sinusoidal function (fig.1&4, page 3, Para [0039].

Re claim 3, Jean and Liu references teach the method of claim 2, and Liu reference also teaches the window function comprises one of a Hamming window, a Hanning window, and a Blackman window (page 2, Para [0027], line 8-9).

Re claim 4, Jean and Liu references teach the method of claim 1, and Liu reference also teaches the shaped carrier to produce the ultrawideband pulse (page 2, Para [0027].

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jean et al, US 2004/0239337, Liu, US 2005/0078767 and in view of Siwiak et al, US 20040174928.

Re claim 5, Jean and Liu fail to teach the method is performed via a mixer and a CMOS radio frequency switch. However, Siwiak does (page 23, Para [0357] & page 25, Para [0385].

Therefore, taking the combined teaching of Jean, Liu and Siwiak as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the arrangement of the method is performed via a mixer and a CMOS radio frequency switch as thought in Siwiak into Jean and Liu for the manufacture and marketing of high data-rate consumer products.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shattil, US 2004/0213351 and in view of Taguchi, US 4815135.

Re claim 6, Shattil discloses an ultrawideband radio frequency signal generator (page 2, Para [0027], comprising: a second signal generator operable to generate a carrier signal (page 16, Para [0377], line 1-4, "The multicarrier generator 220 may include any type of system that generates a plurality of carrier signals"). But Shattil fails to teach that a signal generator operable to generate a sinusoidal window function; and a mixer operable to produce an ultrawideband radio frequency product signal as a

product of the sinusoidal window function and the carrier signal. However, Taguchi does teach a signal generator operable to generate a sinusoidal window function(as show in fig. 14B, window generator (47) which generate a sinusoidal window function); and a mixer operable to produce an ultrawideband radio frequency product signal as a product of the sinusoidal window function and the carrier signal(as shown in fig. 14B, mixer(44), that could mixing the window function and the signal the carrier signal which is teaching in Shattil reference (co1.17, line 30-36, "generated window function is applied to multiplier 44 which outputs the products of n sinusoidal waveforms").

Therefore, taking the combined teaching of Shattil and Taguchi as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the arrangement of a signal generator Operable to generate a sinusoidal window function; and a mixer operable to produce an ultrawideband radio frequency product signal as a product of the sinusoidal window function and the carrier signal as thought in Taguchi into Shattil to eliminates discontinuity appearing in the output waveform.

Re claim 12, which claim the same subject matter as recited in claim 6. Therefore, claim 12 has been analyzed and rejected with respect to claims 6.

5. Claims 7, 13-14, 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shattil, US 2004/0213351 ,Taguchi, US 4815135 and in view of Leenaerts, US 2003/0087624.

Re claim 7, Shattil and Taguchi fail to teach an RF switch operable to gate the ultrawideband radio frequency output signal. However, Leenaerts does teach an RF

switch operable to gate the ultrawideband radio frequency output signal (page 1, Para 0010, line 24-28 and page 2, Para [0020], line 1-18).

Therefore, taking the combined teaching of Shattil, Taguchi and Leenaerts as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the arrangement of an RF switch operable to gate the ultrawideband radio frequency output signal as thought in Leenaerts into Shattil and Taguchi to reduce the power consumption of the receiver.

Re claim 13, which claim the same subject matter as recited in claim 7. Therefore, claim 13 has been analyzed and rejected with respect to claims 7.

Re claim 14, Shattil, Taguchi and Leenaerts references teach the ultrawideband radio frequency data communications device of claim 13, and Leenaerts references also teaches the RF switch comprises a plurality of CMOS transistors (fig. 3).

Re claim 21, Shattil discloses an ultrawideband radio frequency signal generator (page 2, Para [0027], comprising: a second signal generator operable to generate a carrier signal (page 16, Para [0377], line 1-4, "The multicarrier generator 220 may include any type of system that generates a plurality of carrier signals"). But Shattil fails to teach the following limitations. However, Taguchi does teach a signal generator operable to generate a sinusoidal window function; and a mixer operable to produce an ultrawideband radio frequency product signal as a product of the sinusoidal window function and the carrier signal (co1.17, line 30-36, "generated window function is applied to multiplier 44 which outputs the products of n sinusoidal waveforms"). Shattil and

Taguchi fail to teach an RF switch operable to gate the ultrawideband radio frequency product signal, wherein the RF switch comprises at least three coupled CMOS transistors. However, Leenaerts does (fig.3, it shows a RF switch comprises four CMOS transistors).

Therefore, taking the combined teaching of Shattil, Taguchi and Leenaerts as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the arrangement of a first signal generator operable to generate a sinusoidal window function; and a mixer operable to produce an ultrawideband radio frequency product signal as a product of the sinusoidal window function and the carrier signal as thought in Taguchi into Shattil to eliminates discontinuity appearing in the output waveform ; and an RF switch operable to gate the ultrawideband radio frequency product signal, wherein the RF switch comprises at least three coupled CMOS transistors as thought in Leenaerts into Shattil and Leenaerts to reduce to power consumption of the receiver1.

Re claim 22, Shattil, Taguchi and Leenaerts the ultrawideband radio frequency signal generator of claim 21, and Leenaerts references also teaches at least three coupled CMOS transistor are coupled to a first voltage source, a voltage reference of a different voltage than the first voltage source, an input voltage level, a control signal, and an output conductor (page 2, Para [0020] and [0021].

6. Claims 9-11, 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shattil, US 2004/0213351, Taguchi, US 4815135 and in view of Ward et al, US 6476957.

Re claim 9, Shattil and Taguchi fail to teach the mixer comprises a single-balanced mixer. However, Ward does (co1.4,. line 29-39, "if you only want to look at a few GHz, then a double-balanced or a single-balanced mixer may be used").

Therefore, taking the combined teaching of Shattil, Taguchi and Ward as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the arrangement of the mixer comprises a single-balanced mixer as thought in Ward into Shattil and Taguchi to provide a signal that is easily processed by the present day electronics.

Re claim 10, Shattil and Taguchi fail to teach the mixer comprises a double-balanced mixer. However, Ward does (col.4, line 29-39).

Re claim 11, Shattil and Taguchi fail to teach the mixer comprises a cascade of two or more fixed transconductance amplifiers. However, Ward does (col.2, line 64-col.3, line 11).

Re claims 15-17, which claims the same subject matter as recited in claims 9-11. Therefore, claims 15-17 have been analyzed and rejected with respect to claims 9-11.

7. Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jean et al, US 2004/0239337 in view of Reusens et al, US 6240129 and further in view of Liu, US 2005/0078767.

Re claim 18, Jean teaches a method of generating an ultrawideband radio frequency signal, comprising: generating a sinusoidal carrier signal having a selected frequency (page 8, Para [0086], "A UWB pulse is modulated onto one or more carrier

signals whose frequencies are selectable from a known set of frequencies and carrier signal is a sinusoidal (fig.1 and 4). But Jean fails to teach the following limitations. However, Reusens teaches generating a sinusoidal window-shaping signal having a frequency lower than that of the carrier signal (col.8, line 16-23). Jean and Reusens further fail to teach mixing the carrier signal and window shaping signal to obtain a product signal; and gating the product signal to form an ultrawideband signal such that the window shaping signal component of the product forms a sinusoidal window pulse function. However, Liu does (page 2, Para [0027] & Para [0028], "Window functions in signal processing by Hanning, Hamming and Blackman can also be used as the shaping pulse. Let the pulse shaping function be p(t). Let the impulse response function of the high power amplifier be p.sub.l(t). If p.sub.l(t) is unknown to the designer, the shaping pulse p(t) should be chosen so that the Nyquist criterion can be satisfied, i.e., 2 x (t = kT s) = [1 If k = L ; 0 Else (1)).

Therefore, taking the combined teaching of Jean, Reusens and Liu as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the arrangement of the generating a sinusoidal window shaping signal having a frequency lower than that of the carrier signal as thought in Reusens into Jean for rectangular window R having a length B which is an integer multiple of the periods of all carriers of the DMT symbols does not introduce (ISI) and mixing the carrier signal and window shaping signal to obtain a product signal; and gating the product signal to form an ultrawideband signal such that the window shaping signal component of the product

forms a sinusoidal window pulse function as thought in Liu into Jean and Reusens for distortion measured at the power amplifier output is minimized.

Re claim 19, which claim the same subject matter as recited in claim 3. Therefore, claim 19 has been analyzed and rejected with respect to claim 3.

Re claim 20, which claim the same subject matter as recited in claim 5. Therefore, claim 20 has been analyzed and rejected with respect to claim 5.

8. Claims 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shattil, US 2004/0213351 and in view of Taguchi, US 4815135.

Re claim 25, Shattil discloses an ultrawideband radio frequency signal generator (page 2, Para [0027], comprising: a second signal generator operable to generate a carrier signal (page 16, Para [0377], line 1-4, "The multicarrier generator 220 may include any type of system that generates a plurality of carrier signals"); a modulator that is coupled to receive a data signal from a data signal source, the modulator further coupled to modulate the ultrawideband radio frequency product with the data signal(fig.50C and 46A, page 9, Para [0280], page 31, Para [0560] "The term demodulator, when used herein, may be embodied by any type of device, system, and/or algorithm that is capable of recovering at least one information signal that is modulated and an information-signal generator 281 and a wideband-signal generator 283 are coupled to a modulator 280"); and an antenna coupled to receive the ultrawideband radio frequency product signal and further operable to transmit the ultrawideband radio frequency product signal(page 31, Para[0560]. But Shattil fails to

teach that a signal generator operable to generate a sinusoidal window function; and a mixer operable to produce an ultrawideband radio frequency product signal as a product of the sinusoidal window function and the carrier signal. However, Taguchi does (co1.17, line 30-36, "generated window function is applied to multiplier 44 which outputs the products of n sinusoidal waveforms", also explained in claim 6).

Therefore, taking the combined teaching of Shattil and Taguchi as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the arrangement of a signal generator operable to generate a sinusoidal window function; and a mixer operable to produce an ultrawideband radio frequency product signal as a product of the sinusoidal window function and the carrier signal as thought in Taguchi into Shattil to eliminates discontinuity appearing in the output waveform.

Re claim 26, Shattil and Taguchi references teach the ultrawideband radio frequency data communications system of claim 25, and Shattil reference also teaches the modulator is coupled to the carrier signal produced by the second signal generator, thereby operable to modulate the ultrawideband radio frequency product with the data signal by modulating the carrier signal (page 9, Para [0280] and page 31, Para [0561].

Re claim 27, Shattil and Taguchi references teach the ultrawideband radio frequency data communications system of claim 25, Shattil reference also teaches the modulator is coupled to the ultrawideband radio frequency product signal output from the mixer, thereby operable to modulate the ultrawideband radio frequency product signal with the data signal (page 31, Para [0560].

Re claim 28, Shattil and Taguchi references teach the ultrawideband radio frequency data communications system of claim 25, and Shattil references also teaches an RF switch coupled between the mixer and the antenna, thereby operable to gate the ultrawideband radio frequency product signal with the data signal (page 7, Para [0257], where it says the term coupler can conclude an antenna, mixer and RF switch).

Re claim 29, Shattil and Taguchi references teach the ultrawideband radio frequency data communications system of claim 28, and Shattil references also teaches the mixer is coupled to the RF switch, thereby operable to modulate the ultrawideband radio frequency product signal with the data signal (page 7, Para [0257]).

Allowable Subject Matter

9. Claims 8, 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nurul M. Matin whose telephone number is 571-270-1188. The examiner can normally be reached on mon-fri (7:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nurul Matin
Examiner.

MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER